

"We have a great opportunity here at Elmendorf AFB, with its beautiful and unique surroundings, to develop our own distinct and recognizable Alaskan architectural theme, and improve our land use plan".



I am pleased to present the *Elmendorf Air Force Base Architectural Compatibility Standards*. This document contains the planning and design standards that form the blueprint for the built environment of today and tomorrow's Elmendorf Air Force Base.

During my Air Force career, I have seen a diversity of military bases. The common theme among those installations which successfully fostered a sense of community excellence, where residents can proudly live, work, and raise their families, is architectural compatibility. A closer look at those installations reveals each has its own distinct and recognizable architectural theme, as well as a clearly defined land use plan. We have a great opportunity here at Elmendorf AFB, with its beautiful and unique surroundings, to develop our own distinct and recognizable Alaskan architectural theme, and improve our land use plan.

Each of us must take an active role to realize this vision . . . from the smallest self-help work order, to the largest military construction project. Together, with the continued support of the entire Elmendorf Community, we can enhance the quality of our base and transform Elmendorf AFB to tomorrow's showcase.

KOBERTUS C.N. REMKE Brigadier General, USAF,

3rd Wing Commander

6 June 2003

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INTRODUCTION:

During the fall of 2001, the 3rd Wing embarked on the mission of creating Architectural Compatibility Standards, and defining an Alaskan architectural theme for Elmendorf AFB.

The first step involved assembling a group of expert design professionals to form a planning assistance team (PAT). The team reviewed the existing architecture of Elmendorf AFB, surveyed local architecture prevailing themes, and provided recommendations for an "Alaska theme."

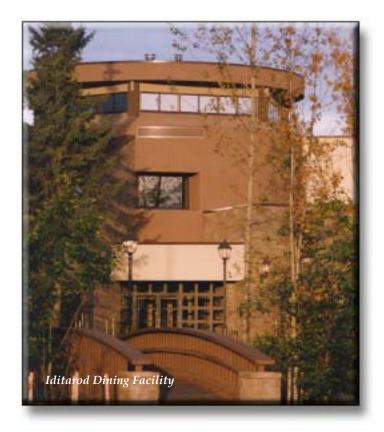
The Third Wing adopted the standards herein as the *Elmendorf AFB Architectural Compatibility Standards*.

The Elmendorf AFB Architectural Compatibility Standards shall serve as the primary tool for planning and design decisions, which will shape the Elmendorf built environment of the future.

All current and future projects on Elmendorf AFB must comply with the standards. While the standards are available to all who have an interest in the Elmendorf community, they are specifically targeted at the design and construction community, military and civilian alike, who are directly responsible for implementing the vision outlined in these standards.

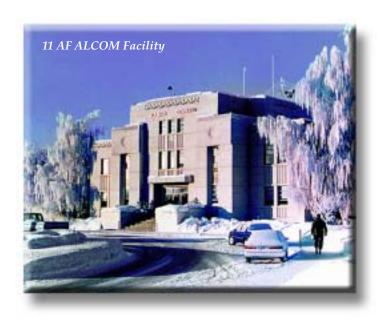
Elmendorf AFB also has a *50-Year Vision*, which is introduced in this document. The *50-Year Vision* serves as the primary installation planning and development tool for decades to come, and will be implemented cooperatively with Elmendorf AFB's Architectural Compatibility Standards.

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ELMENDORF AFB 50-YEAR VISION:

Elmendorf AFB has a long-range base development plan, called the "50-Year Vision." This plan establishes a zoning, or districting, guide for Elmendorf AFB that is consistent with general community planning principles. The 50-Year Vision is anchored around the airfield, and consists of commercial, industrial, administrative, services, medical, residential, and community districts, among others. Many of the districts in the 50-Year Vision are seamless with past and current Elmendorf configuration. However, some districts will undergo significant transformations.

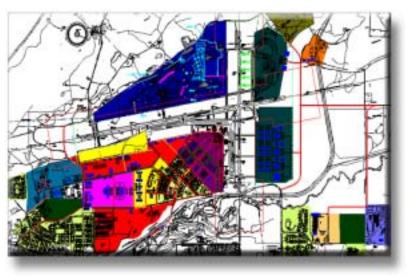


Foremost among the transformations, is the community district, currently scattered about the installation, as well as the industrial area, which is currently located in the "base core" (often referred to as the old Alaska Air Depot). The goal is to relocate industrial functions out of the old Alaska Air Depot, and consolidate them according to functional use. The base core will subsequently be reserved and developed as the community services area to centrally serve base residents.

Preserving Elmendorf AFB's rich World War II heritage is a vital part of the 50-Year Vision. The base core will continue to serve as the base's administrative area, preserving several historic facilities, including Wing Headquarters, the People Center, Services/Contracting Center, the ALCOM facility, the ALCOM Annex, as well as Hangars 1, 2, and 3.

In summary, the 50-Year Vision establishes planning guidelines that will enable Elmendorf to efficiently utilize limited real estate, and fulfill its current mission requirements, while retaining flexibility to expand and adapt as the mission evolves in the future. A top priority in developing the 50-Year Vision will be implementing the Architectural Compatibility Standards, not only transforming existing facilities which do not conform to the standards, but also ensuring all new facilities conform to standards and promote the "Alaska theme."

The Elmendorf AFB 50-Year Vision



ARCHITECTURAL COMPATIBLITY STANDARDS:

COLD CLIMATE DESIGN:

The average Elmendorf AFB temperature in January ranges from 6 to 20 degrees; and in July ranges from 59 to 70 degrees. Daylight varies dramatically from 4-1/2 hours in winter to 19-1/2 hours in summer. The average annual precipitation is 15.9 inches, with an average snowfall of 69 inches. Elmendorf AFB is also subject to high winds gusting to 100 MPH, and is located in an active seismic zone.



Due to the geographic location of Elmendorf AFB, and the length of winter, cold climate design principles are the foundation upon which the Elmendorf AFB *Architectural Compatibility Standards* originate.

The following are the foundation elements of the Elmendorf standard:

- Arctic Entrances: Provide protected transition from exterior to interior of building.
- Fenestration/Openings: Orient southward to maximize daylight and solar gain.
- Roof Design: Pitched roofs to shed snow with maximum ventilation.
- Building materials: Materials shall be durable and low-maintenance in cold climate.
- Color: Natural finishes, integral color admixtures, or factory-finishes, minimizing maintenance.
- **Context**: Relate building to its function and surroundings.
- Mass/Scale: Vary building mass to human scale, facilitating pitched roof design.
- Form/Proportion: Minimize exterior surface area to maximize energy conservation.
- Site Orientation: Orient main entrance and parking to the south, maximizing sunlight.
- Pedestrian Site Planning: Create pedestrian spaces to encourage outdoor activity.
- Vehicle Parking: Designs shall support efficient snow removal and force protection.
- **Lighting**: Provide well lit spaces to maximize safety and promote outdoor use.
- Roadways and Streetscape Treatment: Promote safety and efficient snow removal.

These cold climate design principals constitute the basis for Elmendorf AFB's architectural theme known as the "Alaska theme", described in detail on the following page.



Split-faced block base, natural earthtone color

Heated sidewalks at entries

Indigenous landscaping

ELMENDORF AFB's "ALASKA THEME":

An architecture representing Air Force strength and professionalism, based on sound cold climate design principles, a harmonious blend of durable materials, natural colors, and expressive structural features inspired by Alaska as the "last frontier".

Elmendorf AFB's architectural theme, known as the "Alaska theme", is defined as: an architecture representing Air Force strength and professionalism, based on sound cold climate design principles, a harmonious blend of durable materials, natural colors, and expressive structural features inspired by Alaska as the "last frontier."

Several buildings on base convey the "Alaska theme", qualities one would expect to find in the "last frontier." Characteristics these facilities have in common include:

ALASKAN ARCHITECTURAL THEME ELEMENTS:

- Arctic entries, with gable roof, protecting transition from exterior to interior.
- Expressed truss structure, natural timber or painted metal, at building main entrance.
- Fenestration to maximize interior exposure to sunlight.
- Gabled/pitched metal roof forms (bronze/brown) directing snow/ice away from entrances.
- Natural materials and colors ("Rock Tan" highlighted by earthtone accents).
- Entrances located to maximize southern exposure and solar gain.
- Indigenous landscaping (spruce, birch, wildflowers, berms, etc.).

These characteristics shall be conveyed in all future designs across Elmendorf AFB.

Arctic entrances
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"Alaska theme".



ARCTIC ENTRANCES:

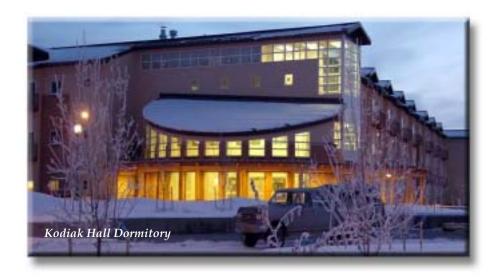
Arctic entrances are required as the primary focus of the "Alaska theme".

The scale and detailing of an entrance give the pedestrian a sense of the function and importance of a building. Along with providing visual breaks in building facades, they provide a readily identifiable point of building entry, and refuge from inclement weather.

Arctic entrances conveying the "Alaska theme" are required to meet the following standards:

- Orient entrance in southward direction, whenever site allows.
- Gable roof over entrance to shed snow and ice away from pedestrians. Covered arcade element, as applicable to building function.
- Exposed/expressive structural features such as columns and truss, or open beam design.
- Columns/truss/beam materials shall be heavy timber (oversized, exposed, round, or square), exterior grade wood (such as cedar) with natural finish, or finished metal, with concrete bases.
- Protected transition space at entrance (i.e. vestibule), providing an enclosed, conditioned space between building exterior and interior.
- Glazing for maximum light and solar gain, whenever building function allows.
- Mechanically heated sidewalks within 12 feet of building entrance.





FENESTRATION/OPENINGS:

Glazing should be concentrated on the south, east, and west sides of each building to maximize daylight and solar gain. Mechanical systems should be designed with glazing location in mind.

Design windows, entrances, and details, to complement proportion of building. Windows should be operable so that they may be opened during mild weather.

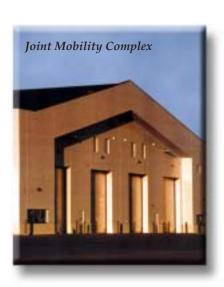
ROOF DESIGN:

Roofs shall be pitched to the greatest extent possible. Gable roofs are the preferred roof form, with a minimum 4:12 slope. Lesser slopes may be considered if the size of structure dictates.

"Cold roof" design shall be employed for all pitched roofs. Design pitched roofs with maximum ventilation. Gable vents relying on natural air movement are insufficient. Ridge vents and soffit vents with "raised heel" trusses provide the best ventilation. All roof designs shall have a minimum R-38 insulation. Limit use of gutters and downspouts. Skylights shall not be used.

Roof shapes should be designed to minimize construction cost, reduce snow management problems, and to divert snow and ice away from entries and walks, as well as emergency exits. Vary roof eave elevations within building groupings to create interest. Maintenance should be carefully considered when selecting roof design.

Only if size and/or location of facility dictates, may "flat roofs" be considered. Flat roofs shall be sloped at a 1/4 inch per foot minimum, however, 1/2 inch per foot is recommended. Internal roof drains shall be used on flat roofs.

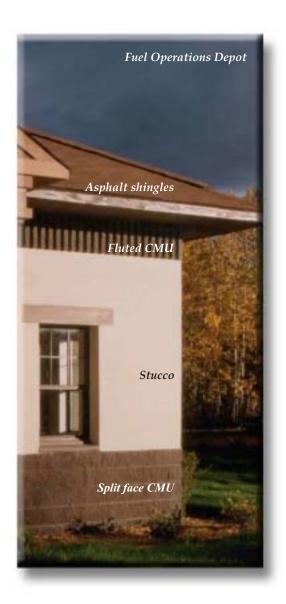


Gable roofs are the preferred roof form with a minimum 4:12 slope.

BUILDING MATERIALS:

Exterior materials shall be low-maintenance and durable to withstand the Alaskan environment. Materials shall provide texture and scale enriching the building's appearance, and shall blend well with surrounding buildings.

The following are Elmendorf AFB's building material standards:



Roofs:

Pitched (standard):

- Standing-seam metal (preferred)
- Modified asphalt shingles, suitable for Alaskan climate

Flat (exception only):

- Four-ply, Built Up Roofing System, "BURS" (preferred)
- Single-ply system (EPDM or equal product)

Roof material selection shall depend on size and scale of the building, as well as context of the surrounding buildings. All roof designs, new or renovation, shall provide a minimum of R-38 insulation.

Walls:

- CMU block, smooth, split face, fluted, or stucco, (with integral color admixture)
- Exterior Insulation and Finish System "EIFS", (or equal material)
- Pre-fabricated metal wall system, low-profile or striated, (factory finished)
- Concrete (cast-in-place)

Wall materials may have smooth or textured appearance. Modest use of architectural details (composed of similar materials) such as cornices, reveals, or masonry patterns may be used to create interest and scale. All wall system designs, new or renovation, shall provide a minimum of R-21 insulation.

Residential Specific: Roofs shall be standing seam metal, or "Alaskan" modified asphalt shingles. Walls shall be residential lap siding (metal or vinyl), or cement/fiber board lap siding, factory finished.

COLOR:

Exterior colors shall present a professional appearance, and unify the architectural elements of a building. Painted materials are discouraged, and shall be kept to a minimum, as they create a maintenance burden. Concrete shall not be painted. Color shall be achieved through admixtures and pigments in the concrete materials. Color shall be achieved through coatings on insulated and finished (EIFS) wall systems. Pre-fabricated/engineered wall and roof panels shall be factory finished.

Modest use of accent colors is encouraged. Building colors should blend well within the "visual district", and relate to surrounding buildings creating a consistent image.



Elmendorf AFB colors are as follows:

Primary wall surface color: "Rock Tan" or matching factory finish.

Base/top/accent color: "Sorrell brown" or natural "earthtone" color, (integral admixture to material).

Windows/doors/openings: Match accent color.

Roof: "Dark bronze" factory-finished metal or brown "earthtone" shingles.

Residential Specific: A variety of colors may be considered for approval, including shades of light gray, beige, and other light earthtones. Modest use of accent colors is encouraged and may include white, brown, beige, and select natural shades of green or blue.



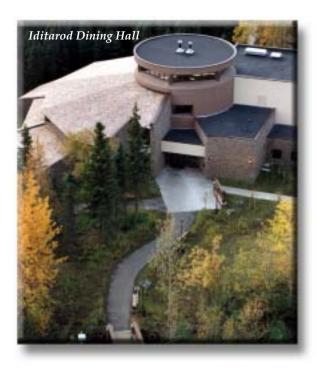


CONTEXT:

Buildings should relate to their function and to their surroundings. Pitched roofs, natural colors, and exposed structural elements relate to the natural Alaskan landscape.

MASS/SCALE:

A proposed building should be scaled to be compatible with the overall mass and individual parts of buildings in its area or district of the base. Except for major buildings, the scale for all buildings should be human, not monumental. Major administrative buildings will have a more formal massing than other building types, signifying their relative importance. Scale and relief should be provided through roof form, fenestration, building articulation, and landscape plantings. Blank walls provide little visual interest and should be avoided, especially in pedestrian areas. Varied building mass facilitates pitched roof design.



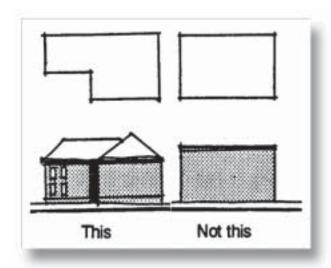


Composite Medical Facility Courtyard

Scale and relief should be provided through roof form, fenestration, building articulation, and landscape plantings.

FORM/PROPORTION:

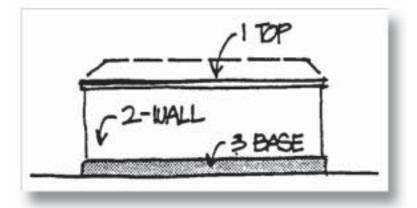
The form and proportion of a building are basic elements which relate a building to its setting. Use proportions appropriate to the facility type. In a cold climate, the overall shape of the building should minimize surface area, creating a compact design, which enhances energy efficiency.





An "L" shaped facility facing south, southeast, or southwest will maximize sunlight and provide a pleasant outdoor space for people to enjoy. New construction on the base should avoid designs using a singular rectangular mass.

Emphasize the elements of all buildings to clearly show a division of roof, walls, and base. Utilize color, materials, and/or details to express these divisions.





Blank walls provide little visual interest and should be avoided.

Utilize landscaping to add visual interest.

SITE ORIENTATION:

Individual buildings should be related to patterns of access, circulation, utilities, and service.

Buildings and site designs should maximize the psychological as well as physical benefits of solar radiation and reduce the effects of cold winds during winter. Shade during summer is desirable to provide visual relief.

Orient active outdoor pedestrian areas, parking lots, and building entrances to the south.

Important cold climate considerations for site design are to:

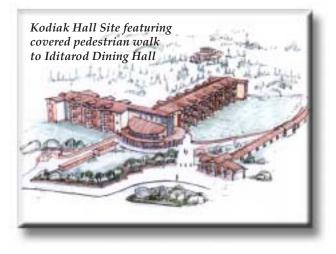
- Orient facility and main entrance in south-facing direction to maximize sunlight and solar radiation, as well as to accelerate snow and ice melt on sidewalks and pavement.
- Create protected sun pockets for outdoor use.
- Utilize evergreen plantings and walls to provide wind screens on north-facing buildings and entrances. Plant deciduous trees along east, south, and west building walls to provide desirable shade during summer months.
- Minimize window areas on north-facing building walls. Use large, south-facing windows to capture warm solar radiation.

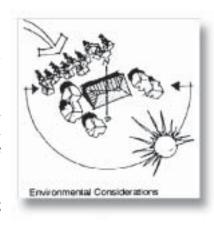
PEDESTRIAN SITE PLANNING:

Pedestrian-oriented site planning and design contributes to the safety, comfort, and enjoyment of outdoor activities.

Sidewalks are foremost in facilitating pedestrian safety, and shall be included in all facility and construction projects. Sidewalks shall be continuous and provide direct connection to building entrances from parking lots. Sidewalks shall be six inches minimum thickness, and shall be capable of bearing light snow clearing machinery without damage. Consider covered sidewalks whenever possible. Destination buildings where pedestrians primarily walk to facility, including dormitories and dining halls, shall have a comprehensive sidewalk system.

A well-planned pedestrian trail system provides recreational opportunities, both in winter and summer, as well as an alternate mode of on-base transportation. Walking and bike trail systems should be safe to use, landscaped, site furnished, and properly constructed of durable materials, and free from obstructions and hazards. Trails should provide continuous, direct routes between primary origin and destination points on the base. All major facility and construction projects shall support the continuation and connection of the established Elmendorf AFB trail system.





VEHICLE PARKING:

Vehicle parking areas consume more site space and impact more on the physical environment than any other site feature and should be located with a good relationship to the building entry and should be properly designed. Parking lot design must support efficient snow removal, **minimizing the use of curbed islands**, as well as providing areas for storage of snow. Parking lots should be oriented to the south to maximize sunlight and melting of snow.

Force protection stand off distances shall be adhered to in parking lot design.



LIGHTING:

Exterior lighting is an important part of site design as it provides safety and promotes outdoor activity during the cold winter months.

Light standards should be located at islands, medians, and at perimeters of lot. Light poles shall be mounted to concrete bases to provide protection during snow removal. Light fixture and pole standards shall be dark anodized bronze aluminum. High mast lighting shall be mounted at an average height between 25 and 40 feet. Light source shall be mercury vapor or high-pressure sodium. Illumination level shall be from 0.5 foot-candles in low use areas, and 2.0 foot-candles in high use areas, such as a BX or Commissary parking area.

Roadway lighting should mark intersections, and promote safe travel during periods of darkness, without introducing light pollution. Poles, fixtures, and type of light source should be consistent. Fixtures should be spaced according to required light intensity and height of pole.

ROADWAYS & STREETSCAPE TREATMENT:

The treatment of the roadways and views from roads are important components in improving the base's visual image. Consideration for maintenance of roadways is equally important, as roadways should be designed to promote maximum snow removal efficiency.

The appearance and safety of roadways can be improved by landscape plantings. Plantings along roadways should be restricted to indigenous trees and evergreens. New plantings should be placed 15 to 20 feet from the edge of the pavement to allow for snow removal and storage. Plantings should reduce negative views, screen parking areas, direct traffic, and stop blowing snow. New roads should be designed to minimize disturbance to existing vegetation. Mass landscape planting techniques should be used to avoid a spotty appearance.



FORCE PROTECTION DESIGN:

"Terrorism is real, evolving, and continues to increase in frequency and lethality throughout the world. The unyielding, tenacious, and patient nature of the terrorists targeting DoD interests forces us to closely examine existing policies and practices for deterring, disrupting, and mitigating potential attacks. Today, terrorist attacks can impact anyone, at any time, at any location, and can take many forms. Deterrence against terrorist attacks begins with properly trained and equipped DoD personnel employing effective procedures. While terrorists have many tactics available to them, they frequently use explosive devices when they target large numbers of DoD personnel. Most existing DoD buildings offer little protection from terrorist attacks."

... excerpt from UFC DoD Minimum Antiterrorism Standards for Buildings, Chapter 1

The intent of force protection design is to minimize the possibility of mass casualties. There are several major design strategies that are applied throughout the *DoD Minimum Antiterrorism Standards* for *Buildings*. They do not account for all of the measures considered in these standards, but they were the most effective and economical in protecting DoD personnel from terrorist attacks. These strategies are summarized below:

• Identify building threat level:

Buildings which are mission critical during period of crises should be designed to significantly higher levels than non-critical facilities.

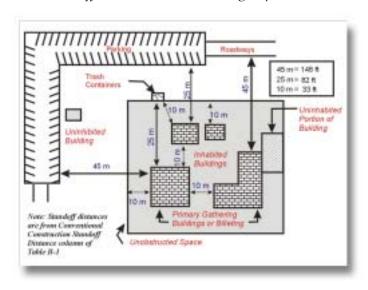
Maximize stand-off distance:

Primary, and most economical design strategy to keep terrorists away from building.

Prevent building collapse:

Limit building collapse and building component failure through structural design that provides greater continuity and redundancy among structural components.

Standoff Distance and Building Separations

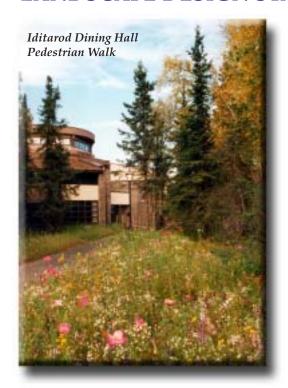


- Minimize hazardous flying debris: Reduce injuries from flying debris, especially glass, through enhanced glazing material and integrated window and door systems (frames, glazing, connection, and structural connections). DoD minimum standards for glazing is 6 mm thickness, unless otherwise specified.
- **Provide effective building layout**: Effective building design and orientation (i.e. internal circulation, visitor control, asset location) can significantly reduce opportunities for terrorists to target building occupants or injure large number of personnel.
- **Limit airborne contamination**: Provide design of heating, ventilation, and air conditioning (HVAC) systems, which reduce the potential for chemical or biological contaminants to be distributed. Locate air intakes minimum 10 feet above ground, provide equipment bracing. Consider redundant utilities or emergency backup, and provide for emergency systems shutdown from within the occupied space.

Designers are challenged to incorporate new and evolving force protection design and construction standards into new and existing facilities, while at the same time maintaining functionality and architectural compatibility.



LANDSCAPE DESIGN STANDARDS:

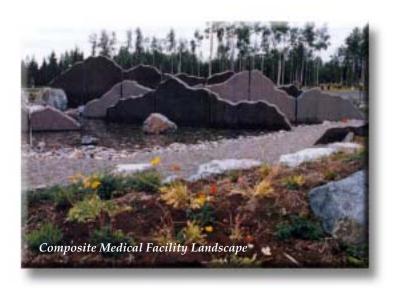


Landscape design should promote a sense of pride and well being among the people who live and work on base, as well as improve the environmental quality of the base.

Landscape design should also provide an aesthetically pleasing way to implement and maintain force protection measures.

Consideration should also be given to minimizing landscape maintenance.

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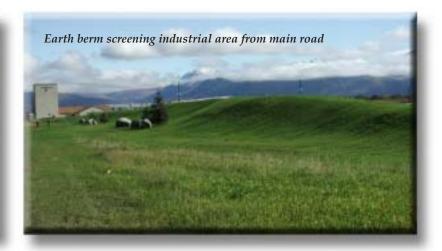
Base entrances should be well landscaped and maintained.

Base entrances should be well landscaped and maintained. Plantings in these areas should generally be formal in appearance and announce themselves as entrances to a military installation. Deciduous trees should be regularly spaced and provide an ordering element. Double and triple groupings of trees may be planted in staggered rows to emphasize visual effect and channel views. Evergreen trees and large flowering shrubs should backdrop the main entrance sign to help visually anchor it down. Shrub beds should be incorporated in a way in which they accentuate the entrance sign, buildings, and other amenities.

Landscape buffers, such as earth berms, provide screening of cold winter winds, as well as screening of undesirable views and noise. Berms also support base trail and bike path systems.

Key feature areas such as the Wing Headquarters, administrative/community center core, and boulevard roadways. These areas will be intensively landscaped and maintained to provide a more formal appearance.

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Support facility areas have low-to-moderate visibility and shall be landscaped to have a natural, utilitarian appearance.

Support facility areas have low-to-moderate visibility and shall be landscaped to have a natural, utilitarian appearance. Consider landscape plantings that are least desirable to moose population, and provide layout that does not promote increased moose traffic on main base.

Parking lot landscape plantings should be incorporated into medians, islands, and along the perimeters of parking lots. Primary consideration shall be given to snow removal efficiency and snow storage

Park land and open area landscapes are to be informal and asymmetrically spaced. Earth berms and natural contouring are encouraged.

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